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New grant policy for sewage projects

A new direct grant system is being drawn up to encourage municipalities to construct and operate their own water and sewage works, announced K. H. Sharpe, deputy minister for the Ontario Ministry of the Environment.

Mr. Sharpe told the Municipal Engineers Association Workshop November 24 in Toronto that the new grant system is part of a new policy under which the Ministry is beginning to divest itself of some responsibilities for financing, operation and some construction of sewage and water works.

To date, direct grants have applied only to provincially owned or provincial-municipal projects, Mr. Sharpe said. "The provisions of this new funding mechanism are now being drawn up, but the important aspects of it are that municipalities may now receive subsidies up front, directly from this Ministry."

Mr. Sharpe said the remainder of development costs will be financed "by municipalities who will be encouraged to develop, own and operate their own facilities."

Details on eligibility, the basis of priorities and the procedures to be followed under the new scheme will be provided to all municipalities in the next few months, Mr. Sharpe said.

"We will continue to step in on behalf of those municipalities which are genuinely unable to develop essential facilities without us," he said. Projects under way and outstanding commitments will also be honored.

He told the engineers that the Ministry would still be the regulator and watchdog in this area, protecting human health and the environment, monitoring water quality, ensuring efficient plant operation, and providing training and development courses for plant operators.

ENVIRONMENT ONTARIO LEGACY
VOL. 6, NO. 4 DECEMBER 1977

Photo by Hans Eijsenck

Some 1,300,000 bottles will be removed yearly from Metro's waste stream by the Glass Gobbler Hotel and Commercial Program initiated recently by the Glass Container Council of Canada in co-operation with Ontario's Ministry of the Environment. Minister George A. Kerr and Ted Meitz of the Glass Container Council sent the first load of empty bottles on its way to a Toronto glass manufacturer for recycling. The program promises considerable savings in energy, materials and landfill sites and will be expanded to other Ontario centres and to British Columbia. MOE has supplied collection containers and hydraulic loading equipment for use in this project.

American Can seals Chlor-alkali plant

American Can of Canada Ltd. has closed and sealed the mercury contaminated remains of its Marathon chlor-alkali plant which shut down August 31, 1977, to meet a Ministry of the Environment control order, Environment Minister George A. Kerr announced recently.

The sealing completes a Ministry program to control major industrial discharges of mercury which began in 1970, when Mr. Kerr issued control orders against six chlor-alkali plants in the province.

"Under this control program, the plants, which used mercury in a process to produce chlorine and caustic soda, progressively reduced their losses of the heavy metal to the environment," Mr. Kerr said. "Plants in Thunder Bay and Hamilton shut down their chlor-alkali operations entirely. Other plants at Sarnia and Dryden converted to processes which do not use mercury. A fifth, in Cornwall, developed its controls to the point where it is consistently satisfying federal discharge requirements."

The Marathon plant, shut down to complete this program, has dismantled all operations contaminated by mercury.

A concrete bunker, measuring 100 feet x 25 feet x 12 feet contains the residue following removal of salvagable material. This bunker has been capped and sealed with high-strength concrete.

"Ministry staff from our Thunder Bay office supervised this process and the drilling of test wells around the disposal site," Mr. Kerr said. "They will continue to monitor effluent from the plant and ground water from these test wells to ensure against any future mercury discharges."

Inside LEGACY

Holland River basin under study

Environment Ontario has started a three-year water resources inventory in the 379 square miles Holland-Black River drainage area at the south end of Lake Simcoe. Water quantity and quality in this area is under considerable pressure from active agricultural and recreational development.

Ground and surface water samples are taken at many locations to assess the present conditions. The study, scheduled to end in 1979, will also list concerns associated with water quality, discuss alternatives for better water management and describe present water use and possible future trends.

Six Control Orders issued to Abitibi

Six Control Orders being issued by Environment Ontario have resulted in a $44 million pollution abatement program at seven of the Abitibi Paper Company's eight Ontario mills, Environment Minister George Kerr announced recently.

"Ministry officials have worked with the company over the past year to establish an abatement program which meets our environmental concern while recognizing current economic and employment conditions affecting the pulp and paper industry," Mr. Kerr said.

Control Orders are now in effect on the Abitibi mills in Smooth Rock Falls, Sturgeon Falls, and Thorold. Orders on the company's three Thunder Bay mills will go into effect later this month. The mill at Iroquois Falls is presently involved in litigation but its program will be finalized shortly.

"The Abitibi cleanup is part of a Ministry program to reduce the significant impact that pulp and paper production has on the Ontario environment," Mr. Kerr said. "We have reviewed all mills in the Province with the companies and as a result, we now have 20 Control Orders and Requirements and Directions in effect, affecting 20 mills in Ontario. Another five mills were served a notice of intent to issue a control order.

Since 1960, the Ontario pulp and paper industry, overall, has spent more than $120 million on pollution control measures including $70 million on facilities for the removal of suspended solids. Since 1969 more than $12 million has been spent by the industry on air pollution control.

Abitibi's five-year cleanup program entails major improvements at company operations in Thunder Bay and Smooth Rock Falls where abatement measures are considered most needed.

At the three mills in Thunder Bay, improvements will include the installation of additional clarifier facilities to remove suspended solids and a new pulping process to reduce levels of organic compounds which deplete oxygen levels in receiving waters.

Removal of similar organic compounds is the target of abatement measures at the Abitibi mill in Smooth Rock Falls. In addition, measures planned at this mill to control air emissions will result in odour reduction and reduced levels of particulate.

General water quality improvement measures will be undertaken at the Abitibi mills in Sturgeon Falls, Iroquois Falls, and Thorold. The new abatement program does not include the company's mill in Sault Ste. Marie where controls are presently adequate.

Control Order issued to Anchor Cap

A Toronto metal and plastic cap manufacturer, Anchor Cap and Closure Corporation of Canada Limited, has been placed under an environmental control order, reported Paul G. Cockburn, director of the Ontario Ministry of the Environment's Central Region.

The control order requires the company to control by June 30, 1980, all odorous and dense visible emissions from their drying ovens.

Acid rain threatens mid-Ontario soil, vegetation and fish

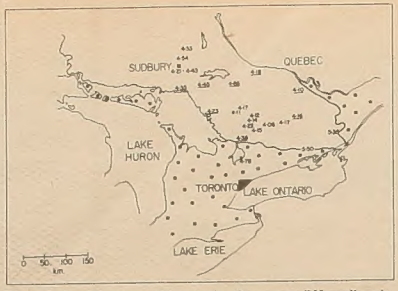
Environment Ontario has released the results of preliminary investigations into the effect of precipitation causing elevated levels of acidity in lakes and rivers in south-central Ontario in an area east of Georgian Bay, south of Lake Nipissing, north of Lake Simcoe and west of the Ottawa River.

The study is part of an Ontario government program begun in 1975 to assess the impact of development in recreational areas. Preliminary data collected in the past 18 months indicate possible damage to the aquatic life in the study area from precipitation.

Evidence indicates that acid precipitation does not threaten human health but may have some adverse effect on soil and vegetation. High levels of acidity in precipitation may make some lakes unfit for some forms of aquatic life, including fish.

While precipitation is normally slightly acidic due to carbon dioxide in the atmosphere, data from the study area show increased levels of acidity caused mainly by airborne sulphur oxides.

Acid rainfall is a world-wide phenomenon. It is widespread in North America as a result of the reaction of nitric and sulphur oxides with the moisture in the atmosphere to form acid. Both oxides are products of the combustion of most fossil fuels and of some smelting.



The underlined figures on this map give the average PH-readings in bulk precipitation samples collected in 1971 to 1975. The other figures give the mean PH-readings measured in 1976. Lakes in the dotted area have a limestone bedrock bottom.

"Current acid loadings of lakes in south-central Ontario pose a long-term serious environmental threat," said Dr. Tom Brydges of the Ministry's Water Resources Branch which produced the report. Dr. Brydges staff will continue to monitor the effect of acid rainfall on 15 lakes in the study area. "Unlike lakes to the south including the Great Lakes, these waters are not underlain by soluble bedrock which acts as a buffering agent counteracting the acidification process."

The report does not identify the direct sources of the acidic precipitation. The major industrial urban areas to the south and southwest of the study area, in both Canada and the United States, are sources of nitrogen and sulphur oxides. Smelting operations to the north and northeast of the study area are major sources of sulphur dioxide. Further studies are under way to determine principal sources.

"The pathways of airborne contamination are not as clearly defined as those of rivers which carry waterborne pollution," said Dr. Sam Stevens of the Ministry's Air Resources Branch. "Air masses are extremely mobile and unpredictable and undergo complex chemical reactions, all of which make the job of determining the sources extremely difficult."

Activities of a related ongoing program, known as the Sudbury Environmental Study, include the evaluation of the environmental impact of industrial emissions and the development of techniques to restore aquatic life in lakes now affected by acidity.

The report "Acid Precipitation In South-Central Ontario" is available at a cost of $1 from the Ontario Government Bookstore, 880 Bay Street, Toronto, M5S 1Z8.

Occupational health labour's role

The new Employers Health Act assigns to the Ontario Ministry of Labour complete responsibility for all occupational health and safety programs, said Ontario Minister of Labour, Bette Stephenson, M.D., at a recent meeting of the Ontario Medical Association in Kingston, Ont.

In assuming this task, the Labour Ministry has integrated experts from the Ministry of National Resources, Mines Engineering Branch, and from the Ministry of Health, Occupational Health Protection Branch, into its new Occupational Health and Safety Division under Assistant Deputy Minister Dr. Clifford Rodney May.

The Employers Health and Safety Act has given Ontario the possibility to achieve the highest possible standards of health and safety at working places. There are, however, serious gaps in the network, and the most damaging of them is the serious lack of trained personnel in the field, the Minister said.

Mercury lower in St. Lawrence

Mercury levels in fish from the St. Lawrence River and in sediment downstream from the City of Cornwall have decreased since 1970, the year Environment Ontario's industrial pollution control program went into effect, Environment Minister George A. Kerr, announced. This improvement is detailed in a new report, "Concentrations of Mercury in Sediments and Fish in the St. Lawrence River, 1975", which compares data between 1970 and 1975.

Reductions in mercury loadings from two Cornwall industries, Canadian Industries Limited and Domtar Fine Papers Limited, have lead to a decline in mercury levels in sediments and fish from the St. Lawrence River, the report concludes.

"When industrial mercury was first recognized as a serious health concern, the provincial government immediately ordered all industries using mercury to drastically reduce emissions", said Mr. Kerr.

"This action has resulted in a marked reduction in emissions in the Cornwall area and in better environmental conditions in this river."

In 1970, elevated mercury levels in sediment were traced from the source in Cornwall to about 13 miles downstream of the City. The most recent data confirm that the contaminated zone has been substantially reduced to about 7 miles.

"It is apparent from the report that mercury concentrations in fish populations downstream of Cornwall are not significantly higher than in upstream populations," said Ralph E. Moore, director of Environment Ontario's southeast region.

Yellow perch sampled downstream of Cornwall showed an average mercury level of 0.340 parts per million of mercury while the same species of fish sampled upstream showed 0.403 ppm. Other fish species sampled which reflected this relationship included bullhead, pike and sucker.

The 1975 study showed that common size classes of pumpkinseed, black crappie, bullhead, yellow perch (up to 12 inches), bass (up to 14 inches), and pike (up to 18 inches) on the average contained less than 0.5 ppm of mercury and are acceptable for regular consumption. Larger yellow perch, pike and bass contained somewhat higher levels of mercury but are still suitable for restricted consumption. Only walleye greater than 18 inches were totally unacceptable for consumption.

The 1970 and 1975 data indicate that declines in mercury levels have occurred in important sport and commerical fish. In 1970, pike, perch and bass had higher average mercury concentrations than similar samples studies in 1975.

"Concentrations of Mercury in Sediments and Fish in the St. Lawrence River, 1975" is available from the Ministry of the Environment's southeastern regional office at 133 Dalton Street in Kingston, Ontario.

Acoustic courses available

Environment Ontario is offering a new course for those concerned with land use planning and noise control.

The five-day course entitled "Acoustics Technology in Land Use Planning" will be offered continuously at the Ministry of the Environment's laboratory in Etobicoke. Both objective and subjective aspects of noise will be studied through lectures, workshops, and a field trip.

A two-day seminar designed to promote interest in and discussion of noise control will be held later. Interested people should contact Environment Ontario's Training and Certification registration secretary in Toronto (965-1027) for further information.

A new training manual entitled "Acoustics Technology in Land Use Planning" has been prepared by the Ministry's Noise Control Section. Volume I contains a comprehensive coverage of noise prediction techniques and noise attenuation due to thick and thin barriers. Volume II known as "Road Traffic Noise Tables" is useful in determining housing densities in new subdivision and new townsites. Both volumes are available from the Ontario Government Bookstore, 880 Bay Street, Toronto, at $10 each.

It's all one world...

Taj Mahal in danger

Indian experts fear that the Taj Mahal will be damaged by acid rain caused by sulphur dioxide emissions from an oil refinery planned in the area, and that the Indian government is doing very little about it. To protect the famous monument an action committee has been formed in Bangalore. The spokesman of the committee, L. P. Siratsa, stated that the government imposition that only low sulphur crude be processed at the new refinery is not acceptable.

Non-human polluters found

Cheer up – man is not the only polluter. The New York Times reports, that ducks have become so numerous around Long Island that they do badly pollute local ponds. A local planning board has suggested removal of the 18,000 or so ducks, but parties opposed to such a move claim that the water can be cleaned up without reducing the duck population.

There is, unfortunately, a catch to the story. The ducks are not able to feed themselves in the densely populated area and depend for their food on crumbs they beg from people. So in the end it is still man who causes the deterioration of the pond-water quality.

Fitness, not fatness, counts

An unknown environmental factor and not the fat content of the diet causes high cholesterol levels in blood, claims Dr. George Mann of Vanderbilt University in Nashville, Tenn. Despite a very strong "diet-heart propaganda" run in the US between 1962 and 1973, general blood cholesterol levels were not reduced.

Neither has mortality much changed in the U.S. in the past 27 years, and no diet therapy has as yet proven effective in the prevention or in the treatment of coronary heart disease. It has been shown, however, that carbon monoxide inhibits the normal breakdown of cholesterol to bile in the body.

The best preventive measure is exercise, says Dr. Mann. "It's fitness, not fatness that counts." Exercise may not prevent the build-up of plaque in blood vessels, but it may enlarge coronary vessels to allow normal blood flow.

Sweden increases EP budget by 30%

Sweden has increased the budget of its Environmental Protection Board for the 1978/79 fiscal year by 30 per cent to $120 million. Of this amount $33 million are reserved for grants for sewerage plants, and $26 million will be used for waste disposal.

Refuse ash for roads

Incinerated domestic waste may become a cheap and efficient material for road construction and road repair, reports the US Federal Highway Agency. The material is produced by heating refuse to 1500° C. This reduces the volume by 70 to 90 per cent. The remainder, consisting of metals, ceramics, glass and ash is broken to 2 to 3 cm bits, reheated to 300°C together with crushed rock and asphalt cement and deposited on road surfaces in the conventional manner.

A five-year, $400,000 project has been started to test roads paved with incinerator residues.

British experiments with incinerated domestic refuse as fill for enbankments and as subbase for road surfaces have shown, that most metals must be taken out of the residues. As iron residues rust, they double in volume, desintegrate and leave holes which may affect the stability.

TOWARD A CONSERVER SOCIETY

By Bruce Henry,
Science Council of Canada.

The quality of life can be improved by individuals and organizations in the community, asserts a report entitled **Canada as a Conserver Society.** Published recently by the Science Council of Canada, it is the outcome of some two years of study under the chairmanship of Dr. Ursula Franklin of the University of Toronto.

Guidance and incentive must be provided by the government. But only if individuals in the community do their share, the report emphasizes, will we be able to keep up our standards of life.

"Conferences, meetings and school projects can raise awareness, change attitudes and promote the exchange of information," explains the Council. "Local food production, cooperative transportation, health care and preventive medicine, recycling, composting of vegetable refuse, insulation of houses, improved furnace efficiencies – all can be organized by local groups or community associations.

"These actions," it continues, "are extremely important, and central to the conserver concepts; but it is almost a contradiction for the Science Council to make specific recommendations in this area. Individual creativity is what we wish to encourage, and individual creativity is best left with an open field."

Better understanding of ecosystems

The Council's concern with the orientation of our society toward mass consumption, waste and high throughput emanates from its studies of natural resources and of pollution. "There is a growing feeling," it explains, "that we must temper some of our bulldozer enthusiasms while we devote much more effort to improving our scientific understanding of living ecosystems." It urges moderation until "we can better foresee the consequences of what we do."

Copies of the report CANADA AS A CONSERVER SOCIETY (Science Council Report No. 27) are available at $2.25 from the Science Council Publication Office, 150 Kent St., Ottawa, Ont. K1P 5P4

It also cites social malaise and economic anxieties as basic causes for concern. Their "worrisome side effects" may be due to the pursuit of purposes and to expectations without understanding their indirect consequences.

Concern for the future, economy of design and an emphasis on diversity, flexibility and responsibility are some of the principal policy thrusts of a conserver society. Also discussed in the Council's report are the importance of understanding the total cost of our activities and the necessity of respect for the regenerative capacity of the biosphere.

The time horizons of individuals, business and government are too short, the report states. "Reports concerning the longer term future of the environment, the depletion of resources, and the deterioration of cities indicate that our planning is too often short-term or aimed at solving yesterday's problems," explains the Council. "But such muddling through only deepens the problems in the longer run."

All resources have limits

And "unless we develop better management techniques," continues the report, "our undirected growth will run blindly into biological, social and physical resource limits, with the result that we shall face more and more capital shortages, increasing pollution and waste disposal problems, and increasingly complex social conflicts."

Concern for the future suggests that we question our behaviour by asking what sort of Canada we will leave to future Canadians. – what structural changes we must make now to ensure a more sustainable future.

Overcapacity built in

The principle of economy of design means that "we must use technology more thoughtfully" according to the Council. "Because of an infatuation with growth and activity, we have tended to build over-capacity into our systems". Transportation is a good example. The systems serving our cities are designed to accommodate users at peak hours and are underused the remaining 20 hours of the day.

Flexible work hours, a four-day work week and car pooling could alleviate the traffic problem at far less expense than new roads and expressways. "Expansion of the system or more efficient use achieve the same; but 'doing more with less', saves resources and scarce social capital," asserts the Council.

Total social efficiency

The "more" and the "less" must be interpreted in a total system sense, explains the report which is subtitled "Resource Uncertainties and the Need for New Technologies". "We must aim at **total** social efficiency and best use of resources. Apparent economies can turn out to generate extra work and waste."

The report draws attention to the value of diversity: "Just as in nature diversity in human society increases flexibility, adaptability and resiliency. It allows decentralization of responsibility, and optimal performance from local resources."

With the assistance of Environment Ontario, municipalities are collecting and recycling derelict cars.

The costs of our actions

Moreover, we often do not know the costs we may impose on others or on the future by our careless housekeeping. "If the total costs – the true costs to others, to ourselves, and to future populations – of our actions could be seen for what they are, a conserver society would result almost automatically". "Total costing," admits the Council, "will increase the prices of some products," and many will fear that Canadian producers will be priced out of world markets" – but the direction in which we should try to move is clear. "Other industrially developed countries are facing similar problems," explains the report, and "progress should be sought as a component in international trade negotiations."

Energy efficiency and conservation, the development of renewable or sustainable energy sources, an emphasis on materials conservation and recycling, and the promotion of new "conserver" business and employment opportunities are main areas where the Council would like to see the country begin to apply conserver principles.

The report discusses the importance of wringing maximum social benefit from each unit of energy and remarks that "energy conservation throughout the entire social system will require greater co-operation between the various sectors of our society. New efficiency standards, pricing policies and rates of taxation must be developed."

Government as honest broker

"Government will have to act as the honest broker between energy producers and consumers; scientists and engineers will have to demonstrate efficient energy systems, new conservation ideas and help to find new energy sources," explains the report.

New business and employment opportunities will arise in such areas as energy conservation and new energy sources, in the conservation, reclamation and recycling of materials and in new technologies based on biology and ecology. The Council urges Canadians not to miss the opportunities of these new fields. "The quest for indigenous ownership and control of industry and technology becomes somewhat more plausible in a scenario where many new industries and technologies will be developed, and where selective growth becomes the central policy thrust of our industrial strategy."

The section on "Areas of Application" concludes with a discussion of the role of advertising and marketing in the transition to a conserver society. "A more-is-better philosophy," states the report, "has seduced us into thinking that more is necessary." It suggests that this may not be so.

A number of recommendations for immediate action are also discussed. In transportation we should improve the fuel economy of automobiles and promote pooling; upgrade public transit in urban areas; upgrade and electrify railways in high-density areas; improve the use of existing transport systems rather than build to peak demand; substitute electronic communications such as teleconference for travel, and prepare to introduce restrictions on gasoline usage.

In the community we should provide incentives to improve home insulation; adopt building codes with new energy standards; improve the energy efficiency of all buildings; legislate sun rights to protect people's investment in solar energy; revise electrical rate structures, and provide incentives rather than the present impediments to homeowners.

In addition, the report enumerates a number of "Things to Think About". Some examples: study Canada's transportation systems; review the need for additional airports; design total-energy communities and energy-efficient northern communities; study the costs and benefits of urbanization.

The Council would also like to see Canadians analyse the costs of energy alternatives; study the ecological suitability of technologies; develop new engines using fuels such as methanol and hydrogen; consider methods of slowing down depletion of scarce resources; educate in conserver approaches to design, and curb wasteful consumption.

The recommendations conclude with four further questions. We should, urges the Council, study the role of advertising and promotion in encouraging wasteful practices; study the feasibility of total-costing of products; improve our understanding of the extent and manner of the "cost-plus" segment of our economy (which adds greatly to inflationary pressures).

"It is difficult to end this study and declare that our work is done," states the Science Council. "The transition to a more conserving society has just begun and much more work and thought will be needed during the course of our Canadian, North American and global 'mid-course correction".

Elliot Lake rebuilds on sounder foundation

By John Steele

Recent increases in the value of uranium have given Elliot Lake a chance for a new beginning, as many mines, closed for years, are being re-opened and new ones are planned.

Uranium mining began on the eastern shore of Elliot Lake in 1953. By 1959 a town of 25,000 people had grown up on the shores of the lake from which the community took its name. But then the markets changed. In the mid-sixties only a few of the original eleven mines were left and the population had decreased to less than 10,000.

Homes, shops and mills were abandoned. Local watercourses suffering from acid mine drainage and contaminated by radioactive waste reflected man's lack of consideration for his environment.

In the early 70's the world's increasing interest in nuclear fuels breathed new life into the ailing town. The following development of the area, although economically welcome, presented many potential environmental problems. The Ontario government recognized the danger and moved quickly to investigate the effects of development on the ecosystem already badly misused during the first boom.

"Elliot Lake's expansion in the 70's must not and will not adversely affect the people of that community nor the fragile environment of the north, said Environment Ontario Minister George A. Kerr. "We have carefully noted the effects of un-planned and ill-advised development of that community 25 years ago and I am determined not to let history repeat itself."

The concerns of government, industry, labour and citizens led the Ontario Cabinet to issue an Order-in-Council in September 1976, which authorized the Environmental Assessment Board to hold hearings on all matters pertaining to the expansion. An exception was made for matters of occupational health and safety of miners, which was dealt with in an earlier report.

On November 30, 1976, the Environmental Assessment Board held a preliminary hearing, at which the companies involved, (Rio Algom Limited and Dennison Mines Limited) through their consultant, James F. MacLaren Limited, presented a study outline for a report designed to satisfy the terms of reference found in the Order-in-Council. Environment Ontario also presented a submission to the Board outlining its past and anticipated involvement in the hearings.

The Board convened Stage 1 of the main hearings on April 18, 1977. The purpose of this hearing was to hear evidence on the background information report prepared for the two mining companies by their consultant and to receive comments on the scope and content of the reports to be produced for the next stage of the main hearings.

On May 10, 1977 the board delivered rulings on the first stage of the hearings. It found that the effects of the population increase would be potentially felt on the Serpent River Watershed and on the town itself.

Other issues dealt with by the board were the sequencing of the expansion of operating mines or re-opening abandoned mines, and the rate at which ore can be produced. Additional issues included town expansion, hazards due to ground water contamination, the construction of homes over mineralized areas, availability of housing and the effects of commuting on surrounding communities. Other general rulings made by the board asked for an accurate diagnosis of existing problems and other matters relating to the effect of mining on wildlife and on the environment.

On June 28, the board reconvened to set a date for the final hearings, based on the consultant's estimation of the time needed to complete their studies. A date for the final hearings has not yet been determined.

Elliot Lake is slowly gearing up for its rebirth. New homes are being constructed, new shops and plazas are opening. But this time long-range environmental and social planning will balance the boom with the needs of the whole ecosystem.

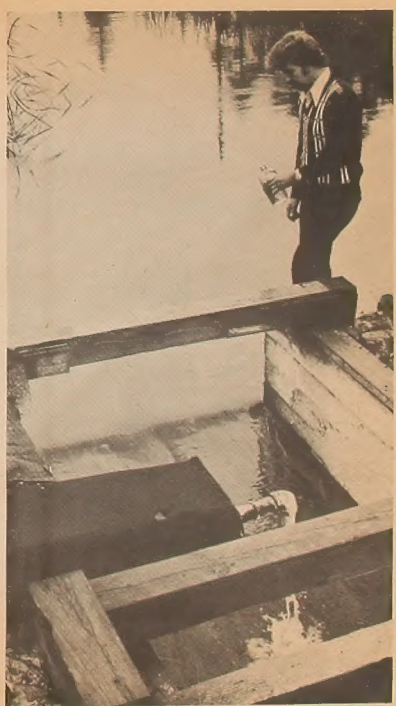
Desolate areas left in Elliot Lakes' environment attest to the lack of concern for ecology during the town's first mining boom 25 years ago.

Mining companies and the federal and provincial governments work together to eliminate the dangers of t

An old waste tailing pipe (above) guards an abandoned tailing site near Elliot Lake

Photographs by Hans Eijsenck

Ron Quipp, environmental officer (right) takes a water sample from the Pronto mine tailings area. The device in the foreground is used to treat effluents seeping from the old tailings for PH adjustment and radium and heavy metal precipitation.



don gas and gamma radiation build-up in the new homes needed to meet the influx of people to Elliot Lake.

Environmental education . . .
with Jane Watson
Educational Resources Co-ordinator

Science, survival and sharing

Gord Chartres (left) of Thunder Bay shows teacher Ray Trottier of Kapuskasing how to construct an orienteering trail and how to apply it to geography and math courses.

Many of the workshops and conferences based on environmental education are just humdrum, useful only for the after-hours idea exchange between delegates. Others provide stimulating lectures but offer little time for follow-up discussion.

Fortunately, the Ontario Teachers' Federation (OTF) has learned to avoid these pitfalls in its outdoor education workshop.

The week-long course is held each October in Northern Ontario for any environmentally-concerned teacher. It's a great opportunity for south to meet north on their home ground.

The number of participants is limited to provide an ideal learning situation and a friendly atmosphere.

This year 25 teachers met at Big Eagle Lodge near Dryden to attend sessions on elementary science activities, survival, orienteering, canoeing, geology, forestry, pond ecology, handicrafts, and ornithology.

Ideas flowed fast and furious. While the nun from Cochrane outlined a classroom difficulty to the Ottawa teacher operating in an open space school, the inter-city teacher, who runs an outdoor course for vocational students, picked up some tips from a colleague working in a rural field centre.

Special credit for a well-run course goes to the program organizer, Dennis Nault of Dryden's Barclay Public School and to Val Slobodian, OTF's Curriculum Project Director.

It's not all garbage

It has been around for a long time – ever since Adam threw the first applecore over his shoulder – and it is here to stay.

At first it didn't matter. If your doorway became too littered with unwanted scraps, you could move to a new neighborhood. If you lived in early Troy, you just added a new storey to your home and moved upstairs to rise above the waste.

Nowadays we know better. Moldering garbage attracts rodents and other pests and can create serious health hazards.

Many cities have chosen to bury their garbage in sanitary landfill sites – dumps with a big difference. Soil is spread over each layer of garbage at carefully regulated intervals. This reduces sanitary or aesthetic concerns. Eventually, the area can be turned into a ski hill, park or some other facility.

This method has two drawbacks. First, it eliminates the possibility of using the land either for agriculture or for building. Secondly, it prevents us from recycling the materials which contain some of our valuable resources.

Incineration is the second most popular garbage disposal method. But again, we lose land by the disposal of ashes; we burn and discard material resources and we create another environmental problem – air pollution.

Cost is always a factor when considering sound waste management practices. In Canada, the average resident produces four pounds of garbage a day and pays roughly $25.00 a year through taxes to have it collected.

We have to do something.

Government Programs

The Ontario Government has several projects under way which fit into a comprehensive waste management program. The Watts from Waste project in Mississauga, for example, will burn garbage and produce steam to run electric generators.

The Ministry of the Environment's new experimental plant at the Ontario Centre for Resource Recovery in Downsview is designed to receive up to 800 tons of garbage a day from Metropolitan Toronto. The plant separates garbage into such commodities as paper, glass, ferrous and non-ferrous metals and compost for research and reuse. This program tests the effectiveness of new separation equipment and processes and contributes to the development of stable markets for recycled products.

But waste management begins in the home and can not be left completely up to the government.

By practicing the four R's of waste management – reduce, reclaim, reuse and recycle – in our homes, school and offices, we can save ourselves money, help to preserve our natural resources and protect our environment.

Give it a try.

The Four R's

The following is a list of waste watching activities which can be easily carried out in the classroom or about the school yard. Can you add anymore ideas?

Reduce waste by:
- using a lunch pail instead of a paper bag
- avoiding disposable plates, cups and cutlery
- using one straw or napkin instead of two
- writing on both sides of the page
- buying one book or magazine and sharing
- avoiding excessive wrapping of lunch food
- buying pop in refillable bottles and taking them back to the store for your refund

Reuse:
- plastic grocery bags to carry lunches, books, sweaters, etc.
- that pencil; sharpen it – don't throw it away when it gets dull
- foil to wrap sandwiches
- twist ties

Recycle:
- use a garbage can only for material which can't be recycled
- set up a special container in every room for unwanted paper products
- do the same for metal and glass products; put them in convenient places, such as in the lunchroom or near a soft-drink machine
- take the refillable bottles back to the store
- take all paper, metal and non-returnable glass products to a recycling depot

Reclaim:
- large glass jugs; they can be used for terrariums and closed ecosystems
- coathangers; add cheesecloth and you have an excellent sample collecting net
- plastic serving containers for jam; they can hold small field samples
- grass cuttings, food waste, etc; build a compost pit
- milk cartons; they're ideal for hanging plants, storage containers and file boxes

Outdoor education in snow country

Winter doesn't have to end outdoor activities. A knowledgeable teacher can use the season to further stimulate classroom discussion and learning.

If you are interested in expanding your teaching skills, why not look into the Ontario Teachers' Federation's new workshop, "Outdoor Education in Snow Country".

The dates are February 12th to 17th, and the setting is the Kingfisher Lake Outdoor Education Centre, just outside of Thunder Bay. Kingfisher has long been known for its specialized winter camping program.

The $100 registration fee includes: transportation to and from the airport, cabin accommodation and meals, local bus travel and the rental of winter sports equipment, such as snowshoes, cross-country skis and winterized sleeping bags.

For further information or to register, write: **Ontario Teachers' Federation, Curriculum Project, 1260 Bay Street, Toronto, Ontario M5R 2B5.**

New tabloids for students

Environment Ontario's Information Services Branch has recently published two new tabloids for students.

ONTARIO'S ENVIRONMENT TODAY, a newspaper for high school students, provides information on a wide range of environmental issues. **ENVIROFACTS AND FUN** attempts to explain pollution to youngsters through a series of games and short stories.

Both of these eight-page newspapers are available free by writing to the Information Services Branch, Ontario Ministry of the Environment, 135 St. Clair Avenue West, Toronto, Ontario M4V 1P5.

Energy conservation in water treatment

Metro works department saves half of energy costs

Energy savings of up to 50 per cent resulted from the energy conservation program introduced by his Department in 1973, reported G. M. Desjardins, of the Toronto Works Department at the Seminar on Energy Conservation in the Water and Wastewater Fields held recently in Burlington. Many of the savings were achieved very simply and results were often immediate.

As a first measure, the Department classified its plants according to the type of work performed in them and set maximum temperatures for each category. The individual categories have the following winter temperature limits:

Locations	Category	Recommended Maximum Temp.
Laboratories, office	continuous sedentary work	21°C
Shops	continuous physical work	20°C
Stores	intermittent physical work	13°C
Unmanned pumping stations	occasional physical work	10°C

If work has to be done in less heated areas, the temperature is raised to 20° C and reset to the lower figure when work is completed.

As a next step, heat losses were reduced in existing buildings by improved insulation, by the control of heat losses through windows and doors and the reduction of the space to be heated. In a 41 ft high, 72 ft wide and 139 ft long boiler room, for example, an insulated false ceiling was installed at a height of 21 ft. This reduced the heating demand by 265,000 BTU/hour. At another station, heating was limited to offices and lunch rooms, and water pipes were protected by electric trace wires and by insulation. In the winter following the change the station's fuel bill was reduced by 50 per cent.

Existing windows where either closed over and insulated, or double glazed. Future plants will be built with as few windows as possible.

Interior lighting was also reduced by either turning off all lights not required for safety or by replacing incadescent by fluorescent or mercury vapor fixtures. In the design of new plants electrical wiring will be arranged to allow the use of partial illumination wherever possible.

Publicity campaign started

Heating and lighting, however, account only for about 10 per cent of the energy needs in water treatment and sewage disposal plants. The remaining 90 per cent are used for plant processes and for pumping.

Here energy can be saved most effectively by water conservation. A publicity campaign was therefore directed at Toronto home owners exhorting them to eliminate leaks, reduce lawn sprinkling, to install flow restricting devices and to reduce the volume of flushing water in toilets.

At the same time the Department introduced a vigilant program for leak detection and repair in its water supply network. In-plant water use was reduced by solenoid control of the flow of cooling water to pumps, float controlled sump-pumps and water meters for better control of water usage.

The efforts to save energy will be continued in the future especially in the design of new plants or plant extensions. In the purchase of pumping equipment, more attention may be given to efficiency than to lowest price.

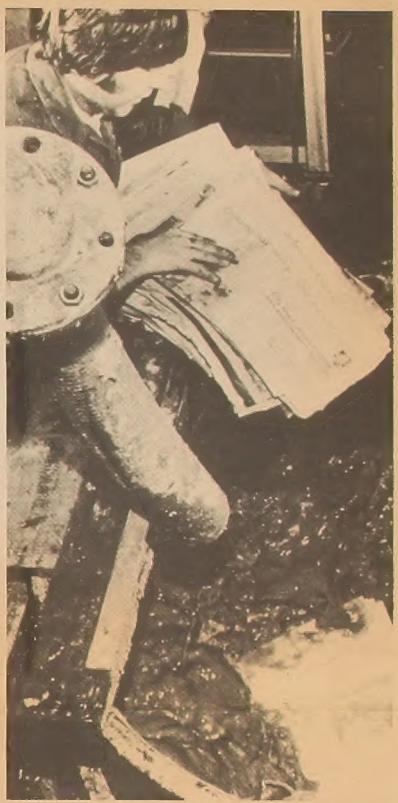
Metro's Refuse Disposal Division has redesigned the transport of refuse from pick-up to transfer station and to landfill for least fuel consumption. The installation of air foils on the cabs of high speed tractor-trailers is being considered.

Methane gas as fuel

Another new step in energy conservation is the use of methane gas generated by the decomposition of refuse in landfill sites. At the Humber Sewage Treatment plant, methane driven gas engines run air compressors for aeration of activated sludge, and plant heat is recovered from the engines cooling water and exhaust piping. At the Main Sewage Treatment Plant methane fuels emergency generator engines, boilers for plant and process heating and an incinerator for the combustion of sludge.

In addition, energy and raw materials are conserved in Toronto by the reclamation and recycling of materials. In 1976 the Department salvaged 236 tons of cast iron, steel, lead and copper, reclaimed 2,173 tons of metals from refuse incinerators and collected 89 tons of cardboard and 5,760 tons of newsprint.

In co-operation with Environment Ontario, Metro is involved in the construction of Ontario's Centre for Resources Recovery in North York. A second project of this nature, the Watts from Waste project in Etobicoke is scheduled for operation in 1980.



Old newspapers are pulped before being mixed with sludge to improve incineration

Waste paper helps to burn sludge

Several waste disposal problems can be solved and energy can be saved by the addition of pulped newsprint to sewage sludge, explained J. V. Morris of James F. MacLaren, consulting engineers, at the energy conservation seminar in Burlington. His conclusions were the result of an extensive study on various methods of sludge disposal carried out in London, Ont.

The process will be introduced at the London sewage treatment plant in May 1978. An overall saving of $184,200 in the first year in the disposal of 9,350 tons of sludge is expected. 3,200 tons of newsprint will be used in the process.

The savings are mainly due to a 30 per cent reduction in gas consumption in the sludge incinerator and to reduced costs in sludge filtration. Acid cleaning of vacuum filters and the handling and transport of the used newsprint waste will be eliminated. The process leaves only a small amount of ash, saving cost in ash transport to landfill.

The purchase of the waste paper at $30 per ton, the employment of additional manpower for the pulping of the paper and the supply of polymers, ferric chloride and lime needed in the process are all included in the cost calculation.

Radioactivity removed from Serpent River water

In 1976 tests for radium-226 in the drinking water supply of the village of Serpent River revealed radium-226 levels between six and nine pico-curies per litre. In March of this year a treatment system designed and tested by Environment Ontario's North eastern Region staff was installed in the village's water system. Construction was completed in July and recent tests showed the radium-226 level to be one pico-curie per litre, well below the provincial guideline of three pico-curies per litre.

"We were concerned about long term health and safety and so we installed a control system quickly," said Environment Ontario Minister George A. Kerr, Q.C. "A lot of the credit must go to our staff from the Sault Ste. Marie office who were instrumental in developing the device."

Environment Ontario's north-eastern region staff began experimental work together with Dennison Mines Limited in the Spring of 1975. By the fall of 1976, ministry staff were satisfied that the device could remove radium-226 from municipal water systems without impairing the quality of the drinking water.

"Originally residents of the village were concerned that the device would change the quality of the drinking water", said Jim Harmer, the Ministry's area district officer. Chemical testing has revealed that the water quality is virtually the same as before treatment".

In the new device water is first filtered in the bottom of a ion exchange unit to remove particulate matter. The radium-226 atoms are then exchanged for sodium atoms by using a resin material. In theory all radium-226 is replaced by an equivalent amount of sodium. The radioactive material is collected in a holding device and then transported to a nearby waste tailing area.

Total cost of the installation was approximately $50,000. The Village of Serpent River is located 34 kilometres south-east of Elliot Lake.

Baker Rd. plant on stream

The $9.2 million Baker Road Water Pollution Control plant, serving Grimsby and Lincoln, was officially opened on October 28, by Ontario's Environment Minister, George Kerr. The plant has an average flow capacity of four million gallons per day, and will expand in three stages to an ultimate peak capacity of 24 million gallons per day around the year 2000.

Over nine miles of sewer pipes carry domestic sewage and industrial waste to the plants secondary treatment system which includes phosphorus reduction.

Eco-Fair pushes new lifestyle

By David Helliwell

Toronto's first Eco-Fair attracted over 1500 people to Seneca College's King Campus recently. It was distinctly aimed at the growing number of families concerned about waste and society's dependence on energy guzzling gadgets, over-packed products and questionable food processing methods.

The eco-fair concern is to show a simpler approach to life: the use of solar heating in homes; of wood burning stoves and wind generated electricity; of biodegradable toilets, and organic gardening, of hydroponics, food co-operatives and life in environmental communities.

MOE's resident "alternative lifestyle" promoter, Dan Shatil of the Environmental Approvals Branch, initiated the organization of the event with Seneca. He is also one of the founders of the Toronto chapter of the Solar Energy Society of Canada, founder of the Civil Servants Solar Energy Club and of the new ATEED Centre for Environmental Communities.

"It was really a tremendous success", said Mr. Shatil about the Eco-Fair. "This was Toronto's first effort. I would have liked to see it extend beyond a single day – but it just wasn't possible this time."

Equipment exhibition –

In 30 seminar sessions, participants discussed such topics as solar greenhouses, vegetarian cooking and woodlot management. Exhibits by equipment distributors, environmental interest groups, organic food makers and enviro-book dealers gave visitors a change of pace.

For some the only beef of the day was the food: peanut butter sandwiches and soyabean-burgers may have tasted great to health food afficionados. They seemed a little bit bland to people addicted to conventional diets.

Eco-fairs are the latest trend in the "alternative lifestyle" movement. Born some 10 years ago in the US, the movement has rapidly become popular, prodded in its growth by such publications as Mother Earth News – a US pioneer – and Harrowsmith and Natural Life, both published in Canada.

The magazine Harrowsmith started as a part-time basement hobby of a Kingston Whig-Standard reporter and was named after its place of publication, the tiny village of Harrowsmith situated some 20 miles north-west of Kingston. In just over a year the magazine's paid circulation shot to over 50,000 copies.

Natural Life was started in November 1976 by Rolf Presnitz in Jarvis, Ont. Within eight months it reached a paid circulation of about 24,000.

This phenomenal growth, unique in Canada's publishing history, was achieved by word-of-mouth promotion only. And by constant reminders to its readers that there is an alternative to the world of unreal mortgages, ridiculous energy costs and plastic foodstuffs – the simpler, less expensive "back to the land" movement.

Eco-fairs represent a new thrust in this movement. They help to establish personal contact between individuals with similar dreams or who – wonder of wonders – have actual experience in doing something about their dream.

Photo by David Helliwell

The solar concentrator at the Eco-Fair taps the sun's energy for low cost domestic hot water supply.

Seneca's eco-fair revealed a demographic curiosity of the alternative lifestyle movement – the distinct age ranges of its enthusiasts. About half of the visitors were in the thirty-ish age group, young families with children. Most of the other half consisted of people past the children rearing age, doing a little advance planning for their retirement.

Despite the age difference, environment concerns were equally shared by the participants at the fair: some were obviously motivated by the possibility of straight dollar savings. About an equal number of visitors worried more about the environmental effects of nuclear powerplants, the shortage of non-renewable resources and the possible effects of questionable food-additives. The eco-fair added a new dimension to all their concerns and gave them a means of sharing practical first-hand knowledge in living the "alternate lifestyle".

AWARD WINNER:

Recycling family sets example

Second prize in the 1976 Environment Ontario-Information Branch award for achievements in environmental writing went to W. C. Kernaghan, editor of The Mirror, for the editorial published below

If every North York family were like the Johnsons of Dunlace Drive in Willowdale, there would be no energy crisis, the word "garbage" would have an entirely different connotation and we'd have no need for an Environmental Control Week, which runs until Friday.

Dave and Ruth Johnson and their four children are a perfect example of what a conservation-minded family can do when they put their minds to it.

Dave Johnson saves fuel. A corporate planner for Shell Canada, he always travels to and from work in a car pool. He never drives alone.

He saves on his gas bill, and think how the expressways would look at rush hour if everyone did the same.

The Johnsons grow vegetables and flowers in their garden and they use garbage to do it. They keep a compost heap in the yard instead of buying chemical fertilizers.

Composting is the conversion of raw organic matter into humus by a fermentation process in which soil organisms break down plant and animal residue.

The end result is a soil conditioner-fertilizer.

The Johnsons don't throw out paper, bottles, tea leaves, egg shells or orange peels. All wastes which emanate from the kitchen are composed along with grass clippings, leaves and weeds.

When their daughter was married she, and her husband, used recycled paper for their wedding invitations (they had to order from the United States to do so).

When Mrs. Johnson shops, she leaves excess packaging on the counter because she thinks it's a waste.

The Johnsons have three teenage boys living at home, as well as a dog and a cat, and they leave one can of garbage outside to be picked up each week!

They are to be admired.

Mrs. Johnson is on North York's environmental control committee, is the borough representative on Metro's recycling, reclamation, energy and environment committee and is involved with Pollution Probe.

If that's not enough, she has written a book entitled What to do Till the Garbageman Arrives.

It's a manual on what to do with the stuff everybody dumps out. Household items are reused as Christmas decorations. They are reused as items for the garden and the garage. They are reused to make simple toys for children.

Are the Johnsons crazy?

No. We are.

In this day and age of increasing environmental awareness this family has done something most of us are just too lazy, or uncaring to do.

The next time you drop your garbage down the chute or put it outside, have a look through it. Most of it is probably material the Johnsons have found a use for, such as the orange peels or the excess packaging.

It's not overly likely that every family in North York will all of a sudden try to "keep up with the Johnsons," but maybe a little reminder now and then about throwing away returnables or getting rid of reusable kitchen wastes will start to get us back on the track to caring about the world we live in.

Remember, that's how it used to be, long ago.

CALENDAR OF EVENTS

January 20-21 – Canadian Environmental Professionals meeting, Howard Johnson Airport Hotel, Toronto, Ont. CCURE, ACFES, OSEM – Mrs. Kate Mather, Thomas Owen & Assoc., 207 Queens Quay W., Suite 211, Toronto, Ont.

February 16 – Water Pollution Control Research symposium, McMaster University, Hamilton, Ont. – Dr. W. J. Snodgrass, Dept. of Chem Eng., McMaster University, Hamilton, Ont., L8S 4C7.

February 20-21 – Land Disposal of Sludge seminar, Sheraton Centre, Toronto, Ont. – D. F. Rhodes, Canada-Ontario Agreement, CCIW, P.O. Box 5050, Burlington, Ont. L7R 4A6

Ontario Ministry of the Environment

Hon. George Kerr Q.C. Minister
K. H. Sharpe Deputy Minister

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